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Guidelines from the Polish Surgical Society and Polish Society of Oncological Surgery Concerning Quality Assurance for Centres Performing Cytoreductive Procedures and HIPEC Procedures in the Treatment of Primary and Secondary Peritoneal Tumours

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Surgical treatment of patients with peritoneal metastases in combination with Hyperthermic intraperitoneal Chemotherapy (HIPEC) and systemic treatments is applied with increasing frequency and, with correct patient qualification, allows for obtaining 5-year survival at a level of 32–52%. The conditions necessary for positive results of such treatment include the high experience of a given centre, its appropriate infrastructure, and appropriate patient qualification for the procedure. As a result of the debate connected with the need to evaluate treatment quality and results, at the request of the Peritoneal

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Cancer Section of the Polish Society of Oncological Surgery, the conditions for quality assurance were worked out and a Quality Assurance Commission was set up for the centres performing cytoreductive procedures and HIPEC procedures in the treatment of primary and secondary peritoneal tumours.

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Introduction

Surgical treatment of patients with peritoneal metastases, in combination with Hyperthermic IntraPEritoneal Chemotherapy (HIPEC), and systemic therapies is currently applied with increasing frequency. The results of numerous studies have shown that with appropriate patient qualification, 5-year survival may reach a level of 32–52% [1–3]. Good treatment results depend on the local cancer stage within the peritoneal cavity and the possibility of performing a radical cytoreduction of the peritoneal metastases.

CytoReductive Surgery (CRS) is very extensive, time-consuming and requires a great deal of experience in such procedures on the part of the surgeon. Experience is the outcome of the number of cytoreductive procedures performed by a given surgeon and also of their skills in large surgeries within the abdominal cavity [3, 4]. Gaining experience through an increasing number of procedures, called the "learning curve", is evaluated differently depending on the following factors: the experience of a given centre, the experience of the surgeon, the qualification for the procedure, and the type of tumour. The experience of a centre in the pre-surgical and post-surgical treatment and management of the patient after extensive surgical interventions is equally important [4].

All these issues affect the quality of the procedures, the rate of postoperative complications and the resulting mortality, and, which is of extreme significance, the length of overall survival (OS) and the length of recurrence-free survival (RFS).

In Poland, between 2009 and April 2020, 1056 CRS/HIPEC procedures were performed in 7 centres, and in 5 of them there were more than 150 procedures/centre conducted. Since May 2019, CRS/HIPEC procedures have been reimbursed by the National Health Fund, at a level covering the basic costs of the surgery, which allows such procedures to be performed more frequently in the centres of oncological surgery, general surgery, oncological gynaecology and paediatric surgery.

As a result of the debate connected with the need to evaluate treatment quality and results, at the request of the Peritoneal Cancer Section of the Polish Society of Surgical Oncology (PTChO), a joint Quality Assurance Commission was set up, consisting of the members of the Polish Surgical Society (TChP) and PTChO, whose task will be to evaluate the centres performing cytoreductive surgeries regarding all the above factors affecting the treatment results in patients with peritoneal metastases. To this end, a register of CRS/HIPEC procedures was also created, and, following the examples of German [5] or French [7] centres, the case of each patient treated with the CRS/HIPEC will be reported in this register, which is one of the obligatory conditions for quality assurance.

Indications for cytoreductive surgeries and HIPEC

Cytoreductive surgery (CRS) and Hyperthermic IntraPEritoneal Chemotherapy (HIPEC) are generally recognised methods of the treatment of peritoneal metastases (PM) of such tumours as: appendiceal malignancy tumours, peritoneal mesothelioma, pseudomyxoma peritonei, and also, in some selected cases – peritoneal metastases of colorectal cancer, gastric cancer and ovarian cancer.

In the case of pseudomyxoma peritonei, peritoneal mesothelioma, primary peritoneal cancer (PPC) and peritoneal metastases of appendiceal malignancy tumours, cytoreductive surgery in connection with HIPEC are the treatment of choice. In the presence of peritoneal metastases of colorectal cancer, the CRS/HIPEC procedures are performed in selected cases, in whom the Sugarbaker Peritoneal Cancer Index (PCI), is not higher than 20 score with concomitant lack of distant metastases, with the exception of metachronous liver metastases (up to 3 resectable lesions) and lung metastases (one single resectable lung metastasis). In the case of peritoneal metastases of gastric cancer, cytoreductive procedures are performed only in a few selected patients in whom the disease stage of peritoneal metastases does not exceed 6–8 score in the PCI classification.

In patients with ovarian cancer, the CRS/HIPEC procedures are recommended in those with IIIc stage, after neoadjuvant chemotherapy in whom there was a positive response to systemic treatment.

In the case of patients with other types of cancer in whom peritoneal metastases occurred and in patients with resectable peritoneal metastases (or metastases in other locations) in whom all the possibilities of systemic treatment have already been used the CRS/HIPEC procedures can be performed if there is an absence of organ metastases, good general condition of the patient, and expected improvement in the condition after surgery. The decision concerning the possibility and necessity of such treatment is taken by a therapeutic team consisting of a surgeon, a clinical oncologist, a radiologist, and a pathologist. Cytoreductive surgeries and HIPEC procedures should not make up a treatment as such, but rather comprise a part of integrated multispecialist therapy, comprising neoadjuvant and adjuvant systemic treatment, surgeries, ablations,

targeted therapies, immunological systemic treatment and others, worked out in an individual treatment scheme for each patient. In a patient in whom it is possible to carry out treatment allowing for a macroscopic resection of a tumour, each combined/adjuvant treatment should be performed with the intention of a complete cure.

An integral therapeutic action which affects the treatment results is the improvement of the nutritional status and respiratory efficiency before the onset of therapy and also evaluation of comorbidities, made as early as possible. The biological condition of the patient should influence the decision about the surgery qualification, term and scope.

CRS/HIPEC procedures are burdened with a high rate of complications (reaching even 40%) resulting mostly from the extensive character of the surgery. Perioperative mortality is about 1–4%. Generally, the frequency rate and degree of complications connected mostly with CRS/HIPEC procedures are comparable with major surgeries such as pancreatic head resection (pancreatoduodenectomy). Therefore, the qualification for the procedure, preoperative preparation, early postoperative care, and patient management after the procedure all mean certain expectations from the medical team, comprising: experience in major surgeries, comprehensive professional preparation, allowing for surgery in all areas of the abdominal cavity and experience in multi-organ surgery. The scope of cytoreduction of the tumour tissue sometimes requires extensive organ resections, extensive peritoneal resection and long surgical procedures connected with patient hypothermia during the surgery or the use of a glucose solution as a perfusion fluid (with the administration of oxaliplatin), which might lead to osmolarity disorders, posing a danger to the central nervous system, among other things. That is why CRS/HIPEC procedures must be performed in centres which, thanks to an appropriate infrastructure and the experience of the surgeons and the entire therapeutic team, guarantee the best possible and safest therapeutic process.

Conditions allowing for good treatment results and the limitation of post-operative complications. Learning curve for CRS/HIPEC procedures

A condition for the success of CRS/HIPEC procedures is the possibility of achieving a complete (CC-0) or nearly complete (CC-1) cytoreduction and the limitation of post-operative complications.

Bhatt et al. [7] analysed the treatment results of 384 patients with primary and secondary peritoneal tumours, treated by 8 surgeons: five of them had 10–15 years' experience in oncological surgery, two – 5 to 10 years and one – more than 15 years; 6/8 had a specialisation in general and oncological surgery, whilst 2/8 in surgery of the GI tract.

PCI score ranged from 3 to 36, with 18 average. CC-0 was performed in 86.7% patients, and CC-1 in 4.2%, whereas in all others – CC-2/3. In 114/384 additionally EPIC (Early Postoperative Intraperitoneal Chemotherapy) was performed with the use of 5FU in 29% and Paclitaxel in 71% patients. 3–5 Clavien-Dindo grade 3-5 complications were observed in 27.3% patients. The 30-day perioperative mortality was 7.3%, and here the most frequent cause of mortality was neutropenia-related sepsis. The complications were as follows: neutropenia – 13%; anastomotic leakage – 7.8%, obstruction – 7.6%, pulmonary complications – 4.7%, sepsis – 4.4%. Revision surgery was required in 21/30 patients. In the conclusions of the study, the authors observe that the experience of the surgeons performing the CRS/HIPEC procedures is necessary for any improvement in the therapy results.

Andreasson et al. [8] evaluated the treatment results of 128 patients with pseudomyxoma peritonei (PMP) selected out of a general number of 307 CRS/HIPEC procedures in the treatment of peritoneal metastases. The group was divided into two parts: I – patients within the learning curve – 73 patients, II – patients after the learning curve. The R0/R1 radicality in group I and in group II was 48% *vs.* 80% ($p = 0.0002$) respectively. Intraoperative bleeding in group I and in group II amounted to 2000 ml *vs.* 800 ml ($p < 0.0001$) respectively, whilst the length of stay in group I was 18 days, and in group II – 16 days ($p = 0.016$). The 4-year survival was definitely longer in group II, in comparison with group I – 80% *vs.* 63% ($p = 0.02$). The recurrence free survival (RFS) in group I and group II was: 64% and 80%; the difference was clear in spite of the lack of statistical significance. Survival was conditioned by basic factors, such as: PCI and histopathological result (MCP-L *vs.* MCP-H). The stabilisation of the treatment results in PMP was observed after 220+/–10 procedures, which is a larger number than generally accepted for other types of peritoneal cancers. This is the outcome of a higher PMP stage in PCI score in the patients qualified for surgery than in the case of, for example, colorectal cancers – the scope of the surgical procedure is larger, which is connected with an increased rate of post-operative complications.

The learning curve should not only consist in the improvement in surgical skills (although they are of key importance for cytoreductive procedures and multi-organ resections), but also in the ability to correctly qualify patients for CRS/HIPEC procedures. The authors believe that an optimum level of CRS stability for a given centre is obtained after 200 procedures of this type.

The publication of Chang et al. [9] compared the therapy results of patients with peritoneal tumours treated in a centre collaborating with a more experienced mentoring centre. In the study material, 24 patients had PMP with average PCI score of 20.3 (6–39), whilst in 26 patients the metastases of other cancers were found in the peritoneum (mostly of colorectal cancer) with average PCI 8.7 (2–21). CC-0 was performed in 80.8% patients with peritoneal metastases of colorectal cancer, whilst in patients in PMP, the CC-0 rate was 75%. The average

length of stay at the ICU (Intensive Care Unit) was 5 days, whilst the average length of hospital stay – 14 days. In the post-operative period, no III/IV grade complications or deaths were observed. In 32% cases there were I/II grade complications. 29 patients needed blood transfusions, and in PMP patients the quantity of transfused blood units was larger than in patients with colorectal cancer. The CRS/HIPEC interventions made up a complex of various procedures: diagnostic, qualifying, preparatory, surgical, oncological and anaesthesiologic. All of these translated into the final treatment results. According to the authors, in order to get optimum stable therapy results, which also includes the limitation of complications and perioperative mortality, it is recommended that 90–180 procedures within the "learning curve" should be performed in a centre which performs CRS/HIPEC procedures. The evaluation of the authors' own results showed the number of procedures within the learning curve may be lower, provided that a centre is supervised by an "authorising" centre which has adequate experience in CRS/HIPEC procedures.

Publications concerning the analysis of the experience of a surgeon and a centre performing CRS/HIPEC procedures quote the work of Voron et al. [10] extensively. These authors list the following risk factors for perioperative complications: a patient history of earlier procedures within the abdominal cavity, age above 60 years, the stage of the lesions within the peritoneal cavity above 12 score in the PCI scale and comprising more than 6 regions. In the analysis of the results obtained in their own material, Voron proposes the following recommendations for new centres introducing CRS/HIPEC procedures: the avoidance of risk factors, the limitation of cytoreductive surgeries to only the metastases of colorectal cancer, appendix and ovaries and excluding these procedures in patients with a peritoneal myxoma or mesothelioma. The supervision by surgeons fully trained in CRS/HIPEC is recommended. According to the authors, it is necessary that the surgeon's experience in such procedures should not be fewer than 40 CRS procedures, which is the condition for performing >70% procedures with complete macroscopic radicality (CC-0), and 140 for complete and satisfactory results with regards to the reduction of complications, radicality of surgical interventions, and obtaining the best therapy results.

In the study of Polanco et al. [11], the analysis concerned the results of treatment with the method in 370 patients with the following types of cancer: appendiceal malignancies (282), peritoneal mesothelioma (60) and gastric cancer (24), in whom peritoneal metastases were diagnosed. The CC-0 radicality was obtained in general in 84.2% patients, the 60-day complication rate was 30%, whereas perioperative mortality – 1.9%. The evaluation of the stage of the lesions with the PCI score showed that the higher the PCI score, the larger the rate of non-radical surgeries. Causes of serious perioperative complications was a high tumour grade, a diagnosis of *mesothelioma peritonei*, and peritoneal metastases of gastric cancer. The authors observed that in order to minimise the risk of non-radical surgery and to reduce serious perioperative complications, as many as 180 CRS/HIPEC procedures must be performed in a given centre. For the improvement of oncological treatment, the learning curve is – according to these authors – 90 procedures. With this number of procedures performed, the rate of 2-year survival in patients increases. The authors emphasise the necessity of performing these procedures in high-volume hospitals as this allows these surgeries to be carried out in accordance with generally adopted safety criteria.

One of the earlier papers discussing the necessity of gaining experience for the improvement in the surgical treatment results in patients with peritoneal metastases comes from a Dutch centre [12]. In this study, the treatment results of 323 patients with peritoneal metastases of colorectal cancer (184 patients) and peritoneal myxoma (139 patients) in three subsequent 3-year periods were analysed. CC-0 was, in these subsequent periods: 35.6%, 48.8% and 65.1%. The difference between specific periods was statistically significant ($p = 0.012$). The rate of postoperative complications decreased from 71.2% to 34.1% ($p < 0.001$). A tendency in hospital stay reduction was observed, decreasing from 24 to 17 days in comparison between the II and III periods, a feature that was not seen between periods I and II. The 2-year survival rate increased from 59.7% in period I, through 61.9% in period II, to 71.7% in period III. The authors showed a continual improvement in the treatment results, evaluated with regards to the possibility of CC-0 resections, was seen after 130 procedures.

The opinions concerning the necessary (and beneficial) supervision of a more experienced centre over a centre which is at the stage of introducing cytoreductive surgeries, were presented in the study by Kusamura et al. [13]. The collaboration with regards to mentoring assistance allows for shortening the learning curve for the CRS/HIPEC procedures and for the reduction of the initial number of adverse factors connected with the procedure, such as: inappropriate patient qualification or the qualification of patients with too high a stage of peritoneal metastases in relation to the professional experience, which results in incomplete cytoreduction, the occurrence of serious perioperative complications and a high rate of perioperative mortality. This opinion was presented after the analysis of the authors' own materials from an Italian centre which was one of the most experienced in the treatment of peritoneal metastases [14]. This study evaluated the treatment results of 420 patients with peritoneal cancers undergoing CRS/HIPEC surgeries. The rate of incomplete cytoreductions, serious postoperative complications and perioperative mortality were analysed. The factors affecting the lack of complete cytoreduction in a multi-variant analysis were: worse general condition of the patients ($p = 0.01$), PCI > 20 score ($p = 0.001$), previous systemic chemotherapy ($p = 0.011$), tumour histological type ($p = 0.027$) and the experience gained by a centre – all these factors were evaluated with regards to the results of the subsequent 50-per-

son patient groups (p = 0.042). The factors connected with serious perioperative complications in a multivariant analysis were: older age (>52 year of age *vs.* <52 year of age, p = 0.009), decreased level of albumins < 3.5g/dL (0.019), PCI > 20 score (p = 0.002) and the timespan of the procedure >600 minutes *vs.* <600 minutes (p = 0.025). The occurrence of complications was not affected by the experience measured by the number of CRS/HIPEC procedures, which can be explained by the maximum level of complication reduction after the performance of 140 procedures. The authors note that such a number of CRS/HIPEC procedures allows for obtaining optimum results both with regards to the possibility of complete cytoreduction and the limitation of serious postoperative complications.

Huang et al. [15] presented the results of a study comprising a group of 800 patients treated with CRS/HIPEC procedures for primary and secondary peritoneal cancers. The study subjects were divided into 8 groups, each comprising 100 patients. The analysis showed an improvement in the treatment results evaluated with 5-year survival between group I (the first 100 patients) and group IV (patients 301–400). For the metastases of colorectal cancer, the survival was: 15% and 31% respectively, for PMP – 64% *vs.* 94%, and for peritoneal mesothelioma – 40% *vs.* 53%. An improvement in the results was also seen with regards to a decrease in postoperative complications, decrease in the amount of blood transfused and decrease in the length of hospital stay. The authors observe that the improvement in the treatment results was obtained after 200 CRS/HIPEC procedures. Also, the treatment of patients with a high stage of peritoneal metastases was reduced from PCI < 20 score to PCI < 15 score.

The problem of the effect of the learning curve on the treatment results of the patients with peritoneal metastases was also the subject of the study carried out by Kuijpers et al. [16]. The analysis concerned the results of 372 patients with peritoneal metastases treated with CRS/HIPEC in a centre with experience in performing cytoreductive surgeries and in a new centre introducing such procedures. Mentoring supervision by a more experienced centre had a positive effect on the initial rate of complete cytoreductions in the new centre, amounting to 86% in comparison with 66% in the mentoring centre for the first 100 procedures (p < 0.001). This supervision resulted also in a limitation of serious postoperative complications in comparison with a pioneer centre. The authors observe that mentoring supervision allows for shortening the learning curve, early improvement in the quality of cytoreductive procedures and the limitation of perioperative complications.

Expert opinions from the centres with the largest experience in cytoreductive and HIPEC procedures

The analysis of publications discussing the conditions which should be met by a surgeon performing CRS/HIPEC procedures pointed to large discrepancies in indications concerning the surgeon's experience in performing such procedures for optimal treatment results and for the reduction of the rate of perioperative complications. The required experienced is defined as the number of procedures performed ranging between 40 and 90, and often depends on the number of procedures in a given centre. The experience of a centre, in turn, should not be below 90 procedures (up to 200), before a centre is considered to meet the required conditions. Taking into consideration the influence of the collaboration between less experienced and more experienced centres on the decrease of the number of independently performed cytoreductive procedures ("from the start") by a given surgeon and also on the experience of the entire centre, the learning curve is not homogenous and depends on many factors.

In order to obtain credible expert opinions in the above respect, we have asked, in an email, for the opinion of some distinguished European experts in treatment of patients with peritoneal tumours with CRS/HIPEC procedures; the experts were:

1. Professor Beate Rau, Chirurgische Klinik Campus Charite Mitte, Berlin, Germany;
2. Professor Marcello Deraco, Director of the Peritoneal Surface Malignancies Unit Fondazione IRCCS Istituto Nazionale dei Tumori, Milano, Italy, Co-Director of ESPSO European School for Peritoneal Surface Oncology;
3. Professor Olivier Glehen, Service de chirurgie digestive et endicrinienne, Centre Hospitalier Lyon, France;
4. Professor Vic Verwaal, Aarhus University Hospital, Denmark.

In the opinion of the international experts presented in table I, at least 100 to 150 procedures with the CRS/HIPEC method are required to be performed in a centre for obtaining an optimum quality of cytoreductive procedures. Three experts drew attention to the need for performing such procedures in high-volume centres. The experience of the entire team is necessary, which translates into a minimum number of 25 or 20–30 procedures per year. Two experts pointed to the need to create a training programme in CRS/HIPEC procedures for surgeons, whilst all of them suggested the collaboration with mentoring centres as an element that is necessary for the best results in the new centres. One of the experts observed that a database is necessary for continuous improvement in the treatment results. Such databases exist in German, French and Dutch centres.

The proposal for the quality assurance recommendations of the Polish Surgical Society and Polish Society of Oncological Surgery concerning the necessary criteria for meeting the conditions for a Reference Centre

On the basis of the published data analysis, the experts' own experience and the consultations with the experts from foreign centres, a team of surgeons associated in the Peritoneal Tumour Section of the Polish Society of Oncological Surgery worked

Table I. European Experts' Opinion Concerning the Treatment of the Patients with Peritoneal Cancers with CRS/HIPEC Procedures

Data source (expert)	Learning curve of a centre	High-volume centre	The experience of a surgical team	Training programme	Collaboration with a mentoring centre	Database
Prof. B. Rau		Yes	Yes		Yes	Yes
Prof. M. Deraco	150 procedures	Yes	25 procedures/year		Yes	
Prof. O. Glehen			20–30 procedures/year	Yes	Yes	
Prof. V. Verwaal	100 procedures	Yes		Yes	Yes	

Table II. The quality assurance conditions defined by the Polish Surgical Society and the Polish Society of Oncological Surgery for centres performing cytoreduction and HIPEC procedures in the treatment of primary and secondary peritoneal tumours

No.	Quality assurance conditions
1.	A hospital performing a full profile of procedures in the peritoneal cavity
2.	Intensive postoperative high dependency unit providing specialist care after CRS/HIPEC procedures
3.	Hospital infrastructure allowing for the preparation, administration and disposal of cytostatic drugs
4.	Team experienced in the management of patients after chemotherapy
5.	The experience of the surgical team performing CRS/HIPEC procedures in extensive oncological surgeries in the abdominal cavity
6.	Surgical team dedicated to CRS/HIPEC procedures
7.	Surgeon's experience > 50 procedures CRS CC-0/1 (reference centre) or < 0 procedures CRS CC-0/1 (the centre with contracted co-operation for the evaluation of the CRS/HIPEC procedures with a reference-mentoring centre)
8.	Annual rate of CRS/HIPEC surgeries – at least 20–25 procedures
9.	Obligatory registration of all CRS/HIPEC surgeries in the CRS/HIPEC procedures register
10.	Obligatory participation in an annual analysis of the CRS/HIPEC procedures on the basis of the register data

out a model of the conditions necessary for awarding the status of reference centre (i.e. one that authorises the procedure) for an institution. The results are presented below in table II.

In the period of creation of specialist centres for the treatment of peritoneal tumours (i.e. combining surgical procedures with intraoperative chemotherapy) it is important to appoint the Procedure Leader i.e. a surgeon specialising in general surgery and/or oncological surgery. Such a person must have professional experience in the treatment of peritoneal cavity tumours with a full scope of surgeries performed within the abdominal cavity. Moreover, the results of surgical treatment in cytoreductive and HIPEC procedures will be regularly (annually) evaluated, which is supposed to guarantee appropriate quality for a given procedure, which is a key element for the treatment results in cancer. It is also required to a have a certificate in training in the use of HIPEC equipment.

The execution of the quality assurance process in CRS/HIPEC centres by the Polish Surgical Society and Polish Society of Oncological Surgery

In order to work out the principles of Quality Assurance, the Peritoneal Cancer Section of the Polish Society of Oncological Surgery submitted a request to the Management of the Polish Surgical Society and Polish Society of Oncological Surgery to analyse the proposals presented concerning the conditions for the centres and therapeutic teams which must be fulfilled for the best possible treatment of patients with peritoneal cancers. These proposals were presented and discussed twice at meetings with surgeons performing CRS/HIPEC procedures and possessing broad experience in extensive surgeries within the abdominal cavity. Additionally, each of the individuals interested in the debate had the opportunity to present their standpoint and conclusions from the discussion in an email. Then, after obtaining a positive opinion from the National Consultant for General Surgery and National Consultant for Oncological Surgery, an application was sent to the Managements of the Polish Surgical Society and Polish Society of Oncological Surgery for the creation of a joint Commission whose task would be to verify whether the quality assurance conditions in the centres which would like to be audited were met. Representatives experienced in CRS/HIPEC procedures or in extensive surgeries within the abdominal cavity, two for the Polish Surgical Society and two for the Polish Society of Oncological Surgery, were nominated.

The centres which obtain a positive opinion from the Quality Assurance Commission will be entered into the register of CRS/HIPEC procedures and will be regularly verified with respect to the results of the treatment of patients with peritoneal cancers. The centres with less experience (an absence of or fewer CRS/HIPEC procedures than the number required for Quality Assurance) are obliged to select a reference centre which meets all the Quality Assurance requirements and to co-operate with them. This is compliant with the opinions of international experts and with the published data. Every year, the Quality Assurance Commission will analyse the quality of cytoreductive procedures with regards to patient qualification

and the quality of surgical procedures on the basis of the data from the CRS/HIPEC procedures register. Each patient who is treated with CRS/HIPEC procedures will have to be reported to this Register. This is one of the conditions for positive Quality Assurance from the Polish Surgical Society and two from the Polish Society of Oncological Surgery for a given centre.

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Abbreviations

CC-0 – complete cytoreduction procedure
CC-1 – nearly complete cytoreductive procedure
CRS – cytoreductive procedures
EPIC – early postoperative intraperitoneal chemotherapy
HIPEC – Hyperthermic intraperitoneal Chemotherapy
ICU – Intensive Care Unit
OS – overall survival
PCI – peritoneal cancer index
PM – peritoneal metastases
PMP – pseudomyxoma peritonei
PTChO – Peritoneal Cancer Section of the Polish Society of Oncological Surgery
RFS – recurrence free survival
TChP – Polish Surgical Society

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